

**PATENT COOPERATION TREATY**

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
**MBM & CO.**  
Suite 2200, Granville Square  
200 Granville Street  
**VANCOUVER, British Columbia**  
Canada, V6C 1S4

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year)	31 July 2006 (31-07-2006)
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Applicant's or agent's file reference  
**1037-148PCT**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.  
**PCT/CA2006/000500**

International filing date (day/month/year)  
05 April 2006 (05-04-2006)

Priority date (day/month/year)  
05 April 2005 (05-04-2005)

International Patent Classification (IPC) or both national classification and IPC  
IPC: **H01L 23/12** (2006.01), **H01L 23/34** (2006.01), **H01L 33/00** (2006.01)

Applicant  
**TIR SYSTEMS LTD. ET AL**

1. This opinion contains indications relating to the following items :

<input checked="" type="checkbox"/> Box No. I	Basis of the opinion
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input checked="" type="checkbox"/> Box No. VII	Certain defects in the international application
<input checked="" type="checkbox"/> Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Date of completion of this opinion 25 July 2006 (25-07-2006)	Authorized officer <b>Coralie Gill (819) 934-5143</b>
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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/CA2006/000500

**Box No. I Basis of this opinion**

1. With regard to the language, this opinion has been established on the basis of:

the international application in the language in which it was filed

a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

a sequence listing

table(s) related to the sequence listing

b. format of material

on paper

in electronic form

c. time of filing/furnishing

contained in the international application as filed.

filed together with the international application in electronic form

furnished subsequently to this Authority for the purposes of search.

3.  In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statement that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
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International application No.  
PCT/CA2006/000500

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-22</u>	YES
	Claims <u>none</u>	NO
Inventive step (IS)	Claims <u>3-7, 9, 10, 12, 15, 16, 18, 19, 21</u>	YES
	Claims <u>1, 2, 8, 11, 13, 14, 17, 20, 22</u>	NO
Industrial applicability (IA)	Claims <u>1-22</u>	YES
	Claims <u>none</u>	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US6807345 (19-10-2004) Simon

D1 discloses systems for removing heat from an optoelectronic component wherein said component is thermally coupled to a heat spreader formed, at least partially, of a material capable of propagating optical signals.

**V.2.1 Novelty (N)**

The claimed subject matter of claims 1-22 complies with PCT Article 33(2).

**V.2.2 Inventive Step (IS)**

The claimed subject matter of claims 3-7, 9, 10, 12, 15, 16, 18, 19, and 21 comply with PCT Article 33(3).

The claimed subject matter of claims 1, 2, 8, 11, 13, 14, 17, 20, and 22 is not considered to involve an inventive step with regard to D1 and common knowledge of the art and therefore does not comply with the requirements PCT Article 33(3).

Independent claims:

Claims 1 and 13 disclose a light-emitting apparatus connectable to a thermal management system comprising a carrier having one or more light transmission regions (D1 - abstract, Figure 4), and one or more light-emitting elements for generating light and adapted for connection to a power source and mounted on a substrate having a cooling interface being inferiorly mounted on the carrier such that said elements are proximate to the light transmission regions and wherein said cooling interfaces is directed away from the carrier and adapted for connection to a thermal management system (D1 - col. 2, line 30 to col. 4, line 55).

Claim 22 discloses a method for forming a light emitting apparatus connectable to a thermal management system comprising steps of providing a carrier having one or more light transmission regions, aligning one or more light-emitting elements having a cooling interface with one of the light transmission regions, and inferiorly coupling one or more light emitting elements to the carrier (D1 - col. 2, line 30 to col. 4, line 55).

Dependent claims:

Claims 2 and 14 disclose a light transmission region comprising either a transparent portion of the carrier (D1 - col. 2, lines 49-67) or an opening within the carrier.

Claims 8 and 17 disclose a carrier fabricated from a thermally conductive material (D1 - col. 2, lines 49-61).

Claims 11 and 20 disclose a carrier fabricated from a transparent material (D1 - col. 2, lines 49-67).

(Continued in supplemental box)

WRITTEN OPINION OF THE  
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International application No.  
PCT/CA2006/000500

**Box No. VII      Certain defects in the international application**

The following defects in the form or contents of the international application have been noted :

Drawing pages 1/8 - 7/8 containing figures 1-10 do not comply with Rule 11.13 of the PCT. Figures 1-10 are hand drawn and do not fulfill the drafting requirements given in Rule 11.13 of the PCT.

**WRITTEN OPINION OF THE  
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International application No.  
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**Box No. VIII      Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made :

Claims 1, 13, and 22 contain the terms "inferiorly mounted" and "inferiorly coupling" which are not clearly defined in the description or drawings. Therefore claims 1, 13, and 22 are unclear and do not comply with Article 6 of the PCT.

Claims 2 and 14 are indefinite and do not comply with Article 6 of the PCT. The inclusion of "either...or" causes ambiguity.

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

**V.2.3 Industrial Applicability (IA)**

The claimed subject matter of claims 1-22 comply with PCT Article 33(4) as mounting assemblies for optoelectronic devices are considered to have industrial applicability.

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**1. Statement**

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